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NOTE

ON THE

STETHOSCOPIC EXAMINATION

OF

THE PREGNANT UTERUS.

By ANDREW ANDERSON, M.D.,
ANDERSON'S UNIVERSITY, GLASGOW.

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The following observations refer to the employment of the stethoscope in examining the pregnant uterus;—

1. How early in pregnancy can the pulsations of the fœtal heart be heard? On 14th August 1842, I examined a woman in whom the uterus was felt enlarged upon examination per vaginam, but formed no tumour above the pubis. She had weaned her last child on the 25th of March; exactly a month after this, that is, on the 25th of April, she menstruated, and the flow continued for a week. The pregnancy had then lasted for *three months and a half at most.* The fœtal heart was heard distinctly by a friend as well as by myself. We guessed its frequency at 160 or 170.

At early periods in pregnancy the detection of the pulsation of the fœtal heart is an uncertain affair, though, when it is heard, it at once renders all other proof of the presence of a fœtus unnecessary.

2. At the full time, just before or during labour, are these pulsations always audible? I examined 180 women, and in 12 failed to hear them; in these 12 cases, and in these only, the child was born dead. In most of them the heart was never heard to beat, and the fœtus had been evidently dead for some time; in others, heard at first, it became afterwards inaudible; and the child had plainly died in the birth. I conclude, that if on a careful examination, there be no pulsation heard, the child may be confidently held as dead: the importance of this assurance in cases of lingering labour, is evident. But *the examination must be adequate*—made by one who has been accustomed to use the stethoscope, and to use it to hear those intra-uterine pulsations,—by one who is allowed carefully to examine every region of the belly in perfect silence, and who re-

peats the investigation thrice at least before coming to a conclusion. But in the great majority of cases the sounds are heard the instant the stethoscope is placed on the abdomen of a woman at the full time; that is, if it be placed in the proper region, the right or left iliac fossa, or a little higher up.

3. A pupil of M. Dubois published a thesis, some years ago, in which he thought he had proved that the locality in which the fœtal heart is heard to beat will nearly infallibly point out the position of the child in utero. Thus, if it be heard low in the belly, it is a head presentation; if high up, the nates or feet present; if across the whole belly, the shoulder or arm: the conclusion being obviously founded on the supposition, that the part of the uterus with which the chest of the child is pressed into contact will be that where its heart will be most distinctly heard. To a certain extent the idea is correct; thus out of 169 cases of head presentation, the maximum intensity of the pulsations was above the umbilicus in five only; but this is quite enough to render the whole nugatory as a means of diagnosis, for be it observed, that these five observations were made not before labour, when the child often moves about from one position to another, but after labour had begun, and when the more certain vaginal examination gave sure knowledge of the posture of the head, now partly engaged in the pelvis. Of three breech cases, the maximum was indeed above the umbilicus in two, but below it in one. In three cases of arm presentation, the sounds were audible across the whole lower part of the belly; but then in several cases where the position of the child was normal, the same thing was observed.

Before labour has begun, the presentation being natural, the maximum is often in the mesial line, or shifts from side to side; but when the head is fairly engaged in the pelvis, its position may always be known by observing where the heart's sounds are best heard. If the position be the first, the occiput being turned to the left acetabulum, the back of the child lies against the left anterior wall of the uterus, and the maximum sound is there; while the child's breast is separated from the right side of the uterus by the liquor amnii. If the position be the ~~second~~ third of Nægelè, (the occiput towards the right sacro-iliac symphisis,) the maximum is to the right, and far back towards the mother's loins; but as labour advances in the second position, and the occiput turns into the direction of the right acetabulum, the sounds advance towards the linea alba, where they are most loudly audible in both cases, as soon as the occiput, preparatory to the exit, lies under the pubis. In several cases, I have traced the rotation of the head in the second position, and found the stethoscopic indication to correspond with that obtained by the finger per vaginam. Of 164 cases, there were four only in which the sounds were all along best heard in the mesial line; in 100 they were audible on the left; in 60 on the right side, —a proportion (5 to 3,) which agrees with the observations of authors on the comparative frequency of the two positions of the occiput.

In three cases of face presentation, where the chin was turned to the left acetabulum, and which in fact are cases of Nægelè's second position, in which rotation has not taken place, and in which the head has been thrown back on the shoulders, the sounds were heard to the *left* side, higher up than usual, and *very loud.* The reason is obvious: had it been an occipital presentation, the maximum would have been to the right side, the child's back being forced into contact with the uterus there; but as the head is in a face presentation thrown back, the consequence is that the back of the child is separated by liquor amnii from the uterus, and its breast forced against the left wall; therefore the sounds are heard over that region, and they are much clearer here than in any other case, because we place the stethoscope immediately over the region of the heart. Thus also in another case, where the face presented, while the brow was felt towards the left acetabulum, the heart's action was heard to the right side. It may, however, be remarked in passing, that the beat of an infant's heart is audible over most of its body; if the stethoscope be placed on the thigh of a new-born child, it is distinctly heard.

4. If a careful examination be made of the belly by the hand, the position of the child can thus be discovered in most cases,—in 60, as I have found, out of 88; and indeed we can frequently tell whether it be a first or a second position, by simply asking the mother on which side she feels the child's motions most lively; in 46 out of 73 cases, she fixed upon that side towards which the front of the fœtus was turned.

5. I am persuaded that if attention were paid to the matter, the presence of twins might almost always be detected by the stethoscope. I had an opportunity of examining four cases, and in two made the diagnosis of twins, from hearing *two maxima* separated by very weak sounds; in the third case, examined before I began to pay particular attention to the matter, the diagnosis was not made, but it was remarked as curious, that the sounds were audible on both sides; in the fourth, there was only one maximum, *but one of the fœtuses had been for some time dead.* In the first case, one maximum was high up on the right, and the other low on the left side; a head presented first, then retrograded, and the children were born as in the first case. In the fourth case, the maximum was high up on the right; both children presented the head, but the dead one was born first. In the first case, the two hearts beat with equal rapidity,—from 140 to 160; in the second, the pulsations to the right were 140 to 148; those on the left, 164 to 172 in a minute; and when a day old, the infants presented a like difference in the rapidity of the heart's action, the pulse being in the child which had presented the breech 108; in the other, 136.

6. It is incorrect to state, as has been done, that numbers such

as these give twice the real rapidity of the pulse of the child in utero ; such an opinion has been founded on the examinations made of the beats in a prolapsed funis. Nothing can be more fallacious; and the best proof of it is, that where you have an opportunity of counting the pulsations in a cord full and uncompressed, (which it certainly is not in these cases,) they are exactly synchronous with the ventricular systole. This opportunity is given by the occurrence of the funic *souffle*, or bellows murmur, in the umbilical arteries,—a phenomenon which I have thrice observed. The proof that this bellows murmur is in the cord, and not in the heart, is that on examination of the child's chest instantly on its expulsion, I uniformly found the sounds clear and pure; but indeed this evidence is scarcely needed, for the *souffle* is heard locally only, and its maximum does not correspond with that of the cardiac double beat.

It is a bad sign of the vigour of the child still unborn, if the pulse fall to much below the number given above; in a child dying in the birth, they usually fall in number as well as loudness, till their final extinction.

7. It has been said, that when the child dies, the placental murmur ceases to be audible. This is not true: I have heard that sound very loud, and yet the child has been born putrid a few hours after. In one case, however, there was no murmur detected, and the placenta proved to be gorged with bloody coagula, the fœtus being dead; in another, where the placental *souffle* was very weak, the placenta was remarkably exsanguine. In one case, the child being alive, there was observed a well-marked *fremissement*, on applying the hand to the abdomen over the region where the placental murmur was most loudly heard.

8. If the stethoscope be kept in contact with the infant's chest, from the moment of its exit from the vagina, the phenomena of the first respirations can be easily traced; and it is most interesting to observe, that the first sound heard in the yet solid lung, is precisely the same as that heard in the posterior parts of the chest in typhoid congestion of the highest degree,—a disease in which the pulmonary substance becomes fleshy and solid, not full as in hepatization, but as it has been not inappropriately called, *splenified;* in short, has as it were returned to the state of the fœtal lung, which would afford a much more exact simile than the spleen does. The sound is "raucous," a hoarse murmur quite different from that of healthy breathing, but which gradually becomes more and more like it, though mixed with crepitation depending on the presence of fluid in the yet imperfectly expanded tubes, and gradually giving place to the clear puerile respiration.

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